inhibition. Any hospital where pacemakers are implanted should have a device that can test for these. The lead should be inspected *in situ* before removal to make sure it is in the proper location and is providing a proper myocardial contact. Testing at the lead terminal will establish its continuity with the generator.

The history is important to determine if some outside electrical exposure such as electrocautery could have affected the unit.

The presence of the pacemaker as a foreign body can complicate matters. The implant site can become infected and the infection may migrate down the lead into the circulatory system. Thrombi may form about the lead and provide a source of emboli.

Testing of cardiac pacemakers postmortem not only aids in determining the cause of death but also, on a larger scale, helps prevent other deaths by monitoring for product defects. These should be reported to the Bureau of Medical Devices, Food and Drug Administration.

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Platelet Function Testing

PLATELETS occupy a key role in maintaining vascular integrity and initiating the clotting process. In recent years increasing interest has developed in testing quantitative as well as functional variations of platelets.

Although the reference method for platelet counting is phase microscopy, a number of reliable automatic counting devices are available. Only rarely is a factitious result produced by cold agglutinins, platelet satellitosis or giant forms of platelets.

The bleeding time is the classic measure of platelet effectiveness because it is sensitive both to quantitative and qualitative alterations.

The Ivy bleeding time test is done by inflating a sphygmomanometer cuff to 40 mm of mercury, making an incision lower on the arm and determining the duration of bleeding (normal 2½ to 10 minutes). Standardization of this procedure has been improved with a template which controls the length and depth of incision. Times are prolonged in thrombocytopenia, usually in von Willebrand disease and often in normal subjects taking aspirin.

Platelet retention testing involves passing blood through a column containing glass beads. Normally 80 percent of platelets are retained in the filter bed. This test is more sensitive than the bleeding time test but subject to many variables. It would be more useful if a standardized commercially available kit allowed greater interlaboratory comparison.

Clot retraction measurements are semiquantitative appraisals of platelet function. Retraction is deficient in thrombocytopenia and in a rare autosomal recessive disorder, Glanzmann thrombasthenia. Careful laboratory control is important.

Platelet aggregometry is done by passing a beam of light through a suspension of citrated platelet rich plasma. On addition of appropriate reagents an aggregate forms, causing a change of light transmission. Adenosine diphosphate (ADP) can aggregate platelets directly. Epinephrine and collagen produce a biphasic curve of aggregation by inducing platelet secretion and release of endogenous ADP.

A series of defects in primary and secondary aggregation has been noted in patients with bleeding disorders. Patients with von Willebrand disease show impaired, ristocetin-induced platelet aggregation. In thrombasthenia, platelets do not aggregate when exposed to ADP. The best known acquired functional alteration is that produced by aspirin. Since many aspirin derivatives and other drugs affect platelet aggregation, all medication should be avoided for ten days before the test is done. With platelet counts below 50,000 results of aggregometry are unreliable.

A dialysable substance present in the blood of uremic patients interferes with platelet aggregation. In a patient with cirrhosis there also may be defective platelet function.

Tests of platelet functions are influenced by many variables and can be capricious. Thus laboratory standardization of equipment, sampling technique and normal controls is particularly important.

Platelet aggregometry is sensitive to so many agents that it seems prudent to show an observed abnormality on more than one occasion before assigning it a causal role in a patient with a bleeding history. Additional clinical experience

is needed to evaluate the significance of an abnormal result when the test is done before surgical operation. It has merit when considered along with history of previous response to trauma and the bleeding time.

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Common Neoplasms of Pet Animals

SINCE JULY 1963 a survey of the incidence of various neoplasms of pets has been conducted by the Animal Neoplasm Registry of Alameda and Contra Costa Counties, under the direction of Robert Schneider, DVM. The physical location of the registry is the School of Veterinary Medicine, University of California, Davis. All veterinarians in the two counties have been invited to submit biopsy or autopsy specimens from animals suspected of having neoplastic disease, and statistics are available on over 40,000 animals.

Comparison of cancer incidence rates adjusted to the same population age distribution for human beings, dogs and cats indicates rates per 100,000 individuals of 300.3, 213.0 and 264.3, respectively. Sites with high malignant rates in man not shared with dogs and cats are digestive tract, lung, uterus, and prostate. A site with high rates in all three species is the female breast. Female dogs are especially prone to mixed epithelial and stromal mammary tumors, the great majority of which are benign.

Some tumors of animals are not recognized in human beings and others have unusual characteristics when they occur in animal hosts. For instance, the frequent histiocytoma of canine skin is a benign self-limited lesion peculiar to young dogs, occurring as a firm nodule or "button" up to 1 cm in diameter, and made up of monotonous cells of reticuloendothelial origin.

Sertoli cell tumors of the testis are extremely common in dogs and rare in human beings. They produce a feminization syndrome marked by loss of hair and the attraction of other male dogs as if they were females in heat. Angiosarcomas and cutaneous mast cell tumors are also frequently found in dogs and are unusual in humans.

Cats and human beings have similar tumor site predilection, but the incidence of lymphomas in cats is extremely high. Lymphomatous diseases of cats are believed to be due to viral infections, and clusters of feline tumors are common. Attempts have been made to relate the feline neoplasms to lymphoid tumors of human beings, but specific studies for the purpose do not support such a relationship.

The principal tumor of female rats is fibroadenoma, a bulky neoplasm common in mammary glands of aging animals. The principal "tumor" of horses is equine sarcoid, a fibromatosis of the skin which appears as cellular collagenous tissue forming a localized dermal mass.

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Hemopoietic Dysplasia (Preleukemia)

ELDERLY PATIENTS who clinically have a moderately severe refractory anemia with quantitative and qualitative abnormalities of erythropoiesis, granulocytopoiesis and megakaryocytopoiesis, with or without chromosomal abnormalities, may have hemopoietic dysplasia (HD). In an estimated 70 percent of such patients overt acute myelogenous leukemia (AML) develops within two years, hence the designation of preleukemia. The term should be avoided since many patients live for years and 10 percent recover completely (Personal communication from R. W. Pierre). (So far none of these have had karyotypic abnormalities. Conversely, karyotypic abnormalities do not presage an early leukemic conversion.) HD is comparable to cervical dysplasia in that it is precancerous in some, but not all cases. Dysmyelopoietic syndromes, myeloid dysplasia, refractory anemia with excess myeloblasts (promyelocytes in American terminology) are synonyms. Chemotherapy appears contraindicated, though treatment with cortisone has been found helpful in correcting peripheral cytopenias.

Morphologic features helpful in diagnosis are